416/245(A)

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SURFACE OF ASCENSION OR AEROPLANE FOR FLYING MACHINES.

APPLICATION FILED SEPT. 10, 1907.

920,554. Patented May 4, 1909.

Fig. 4.

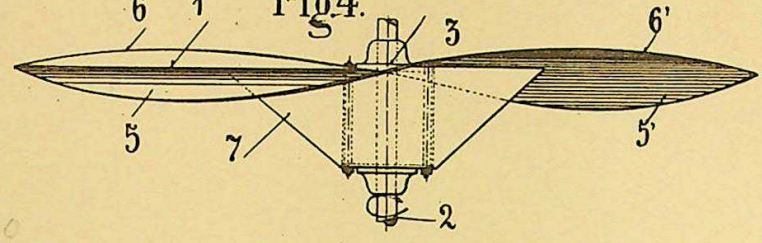


Fig. 3.

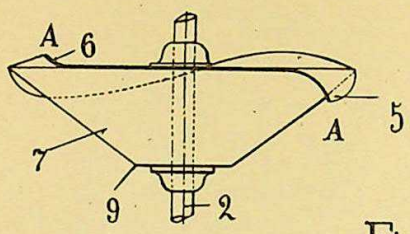


Fig. 2.

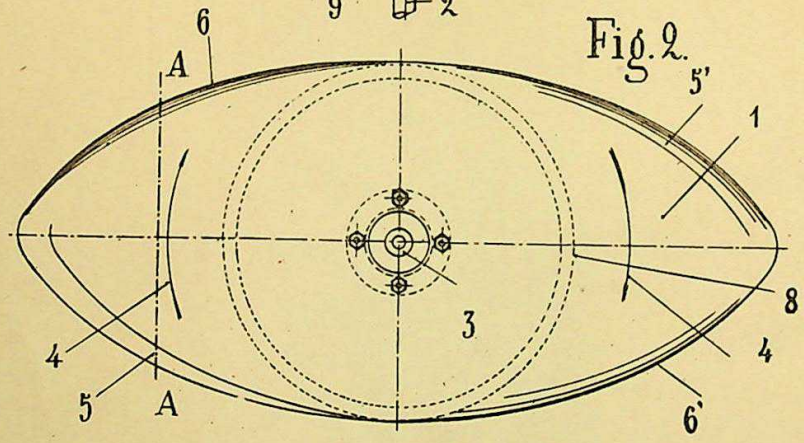
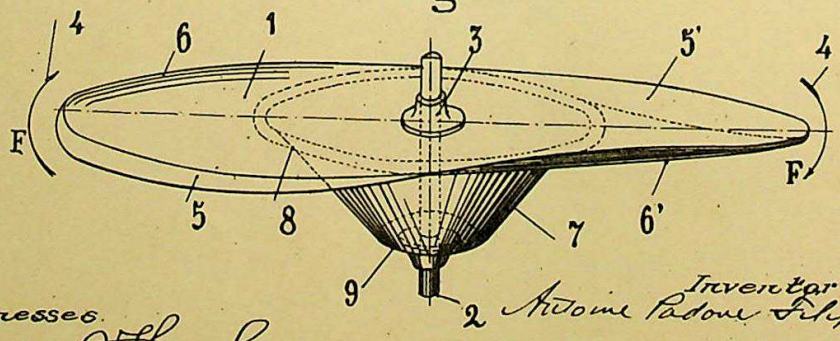


Fig. 1.



Witnesses.
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UNITED STATES PATENT OFFICE.

ANTOINE PADOUE FILIPPI, OF PARIS, FRANCE.

SURFACE OF ASCENSION OR AEROPLANE FOR FLYING-MACHINES.

No. 920,554. Specification of Letters Patent. Patented May 4, 1909.

Application filed September 10, 1907. Serial No. 392,195.

To all whom it may concern:

Be it known that I, ANTOINE PADOUE FILIPPI, a citizen of the Republic of France, residing at Paris, France, have invented Improvements in Surfaces of Ascension or Aeroplanes for Flying-Machines, of which the following is a specification.

Surfaces of ascension or aeroplanes, applicable to apparatus adapted to raise themselves, to sustain themselves, and to direct themselves in the air are well known. Such surfaces as heretofore constructed essentially comprise a spherical canopy with the convexity directed upwardly, provided with two symmetrically arranged webs or fins; at the lower part of such canopy is mounted a series of open frusta of cones which are concentric and have as their common axis the axis of the spherical canopy. When such a canopy is rapidly rotated about its axis there is produced a reduction of air pressure above the surface which reduced air pressure results in an ascensional force.

The present invention has for object to provide an improved surface of ascension or aeroplane of particularly efficient form and simple construction, adapted to act in a similar manner to the known spherical canopy with the fins. The result obtained is always a reduction of pressure above the surface of ascension or aeroplane when set in rotation about an axis perpendicular to the plane surface and passing through its center. The means for obtaining this reduced pressure have been perfected in details. 1. The surface of ascension instead of comprising a spherical canopy provided with fins, comprises a plane bounded by an elliptical curve. 2. The fins are dispensed with and their function is fulfilled and completed by bending downwardly and turning up the edge portions of the surface below and above the plane respectively, as will be hereinafter explained. 3. The concentric frusta of cones which in the old construction exist below the spherical canopy are, in the new surface, replaced by a single frustum of a cone the larger base of which is open and the smaller base of which is closed. The diameter of the larger base is approximately equal to the minor axis of the ellipse of the plane surface.

In the accompanying drawings, Figure 1 shows in perspective a surface of ascension or aeroplane embodying this invention. Fig. 2 is a plan. Fig. 3 is a vertical section corresponding to the line A—A of Fig. 2. Fig. 4 is a side elevation.

As will be seen from the drawings the surface of ascension or aeroplane comprises a plane 1 bounded by a curve of elliptical form. This surface is mounted upon a vertical axle 2, passing through the inter-section of the axes of the ellipse at 3 and to which, in any suitable manner, a rotary movement is imparted in the direction of the arrows 4. The edge portions 5, 5′ of the surface, at about a quarter of the length of the elliptical curve, are each curved downwardly, as shown, below the plane of the surface; as will be seen, they are symmetrical with respect to the center. They act as fins and constantly compress the subjacent air from the periphery toward the center, while maintaining it below the plane. At the same time they draw in the air which is above the surface in rotation behind the fins and thus create a continuous radial current of air from the center toward the periphery. The ascensional force is the resultant, on the one hand, of this subjacent compression and, on the other hand, of the horizontal flight of the air at the upper part from the center toward the periphery, at the same time the horizontally flowing air creates above the surface a reduction of pressure which becomes the greater the more rapid the said air flight is.

The edge portions 6, 6′ of the surface are very slightly curved upwardly above the surface, also symmetrically with respect to the center. They have the effect of giving a greater opening to the air gathered by the gyration of the edge portions 5, 5′; they also augment the thickness of the layer of subjacent compression. The curved edge portions 6, 6′ may however be dispensed with, their function not being necessary in all cases.

Below the surface and riveted thereto is arranged the frustum of a cone 7, the diameter of the base 8 of which is approximately equal to the minor axis of the ellipse. This frustum of a cone is closed at 9 and occupies the place of a mass of air which would be detrimental since, under the action of centrifugal force, it would counteract the action of the reduced pressure produced as has been stated above the surface. Moreover, the external walls of this frustum of a cone form bearing surfaces for the air imprisoned under the surface by the edge por-

tions 5, 5′, the pressure of which air is thus augmented. Finally the presence of this cone, which is riveted to the surface, insures the rigidity and the solidarity of the surface and simplifies the construction thereof.

What I claim is:—

1. A surface of ascension or aeroplane applicable to apparatus adapted to raise itself, sustain itself and to direct itself in the air, said aeroplane having an elliptical contour and comprising a central flat portion and oppositely disposed edge portions, each of which is bent downwardly below said flat portions for about a quarter of the periphery of said aeroplane.

2. A surface of ascension or aeroplane applicable to apparatus adapted to raise itself, sustain itself and to direct itself in the air, said aeroplane having an elliptical contour and comprising a central flat portion and oppositely disposed edge portions, each of which is bent downwardly below said flat portions for about a quarter of the periphery of said aeroplane, and edge portions oppositely disposed and slightly bent up above said flat portion contiguous to said bent down portions.

3. A surface of ascension or aeroplane applicable to apparatus adapted to raise itself, sustain itself and to direct itself in the air, comprising a plane bounded by an elliptical curve, the edge portions of this plane being bent downwardly below the plane at about a quarter of the curve, this bent down portion being symmetrically reproduced upon the other half of the curve, and a frustum of a cone closed at its small base and riveted at its larger base to the lower face of the surface of ascension or aeroplane, the diameter of the larger base of this frustum of a cone being nearly equal to the length of the minor axis of the ellipse.

4. A surface of ascension or areoplane applicable to apparatus adapted to raise itself, sustain itself and to direct itself in the air, comprising a plane bounded by an elliptical curve, the edge portions of this plane being bent downwardly below the plane at about a quarter of the curve, and very slightly bent upwardly above the plane on the contiguous quarter, this bending down and bending up being symmetrically reproduced upon the other half of the curve, and a frustum of a cone closed at its smaller base and riveted at its larger base to the lower face of the surface of ascension or aeroplane, the diameter of the larger base of this frustum of a cone being nearly equal to the length of the minor axis of the ellipse.

Signed at Paris, France, this 20th day of August 1907.

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Witnesses:
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